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THE Unexplained

MYSTERIES OF MIND SPACE & TIME

88

The SPR today
Lost isle of Lyonesse
Fort-prophet or fool?
Rose Gladden, healer
Search for Pluto

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THE Unexplained
MYSTERIES OF MIND SPACE & TIME

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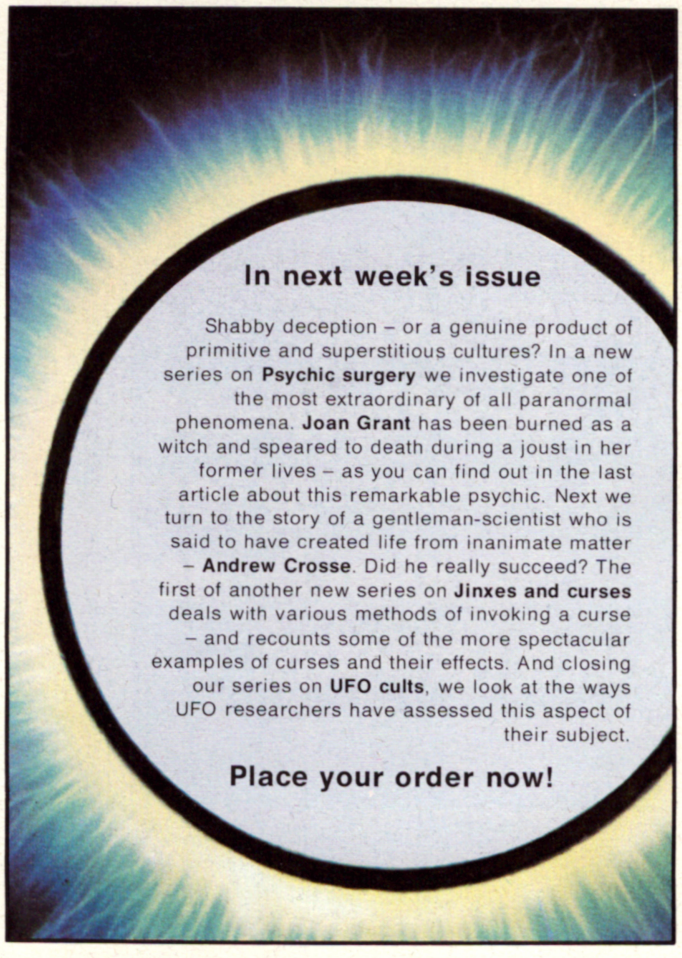
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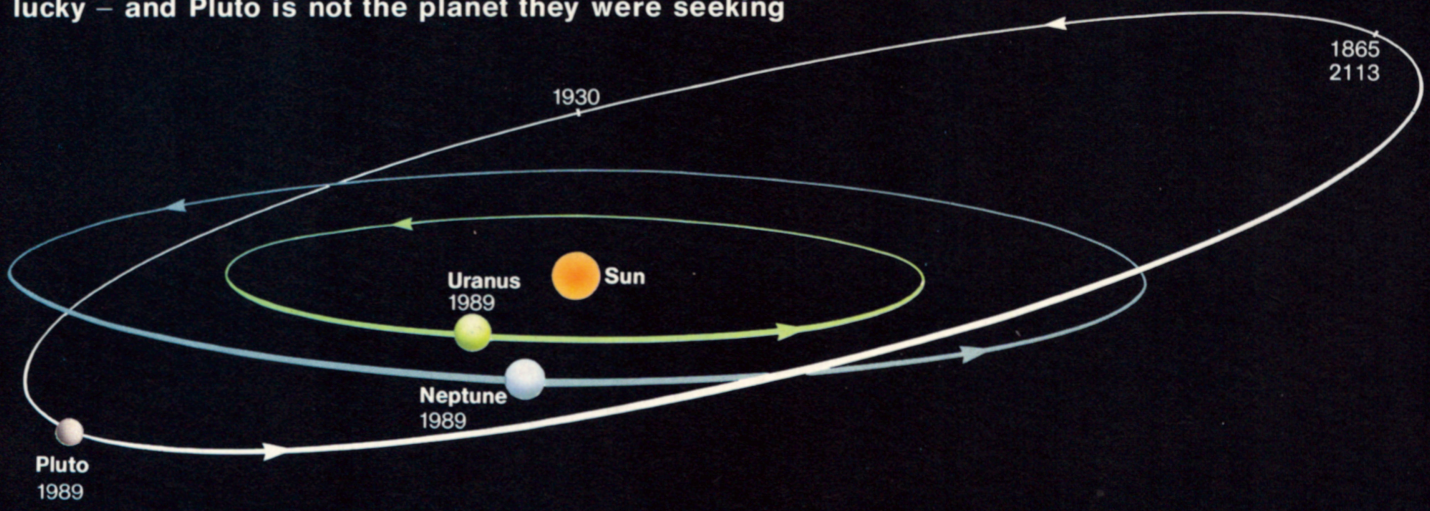
One of our planets is missing

The world hailed a scientific triumph when astronomers found a new planet, Pluto, in just the place where one was expected. But NIGEL HENBEST suggests they were lucky – and Pluto is not the planet they were seeking



THE OUTERMOST PLANET of the solar system, Pluto is the strangest world in the Sun's family. For one thing, Pluto is not at present the farthest planet from the Sun. Although its average distance is greater than that of any other planet, it follows an orbit so elliptical that it can approach the Sun more closely than Neptune, the next planet in. Since 1979 Pluto has been closer to the Sun than Neptune, and will continue to be so until 1999. In addition, Pluto is a double planet: its 'satellite' Charon is almost half the diameter of Pluto itself.

But the oddest fact about Pluto is that it was discovered as a result of a prediction made by astronomers – yet it cannot possibly have produced the effects on other planets that led to the prediction being made.

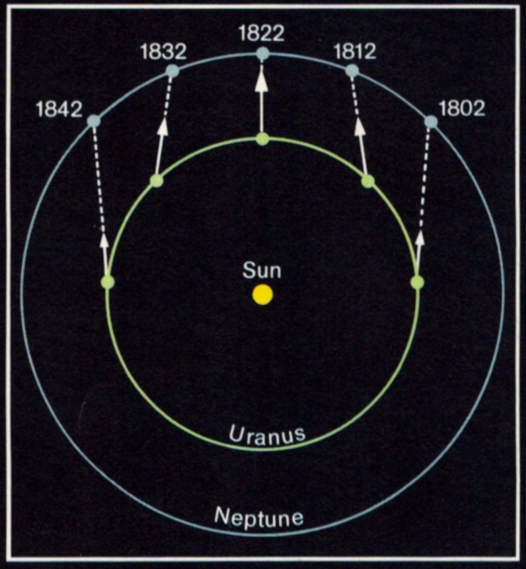
Pluto was discovered in 1930, but the story leading up to that event began almost a century earlier. Astronomers noticed that Uranus, then the outermost of the known planets, was not moving as expected. By the 1840s some astronomers thought that an unknown planet beyond Uranus must be altering its orbit by the influence of its gravity.

Two brilliant mathematicians independently set about the formidable task of using the observations of Uranus to calculate where the new planet should be. The young Cambridge student John Couch Adams completed his calculations first but he had difficulty in persuading professional astronomers to look for the planet. Meanwhile, Urbain Leverrier, a leading French astronomer, also worked out the position of the suspected planet. He was luckier than Adams. He sent the prediction to Berlin Observatory, which had just completed a chart of the stars in the relevant region of the sky. On the first night of his search at the observatory, Johann Galle saw an 'interloper' near the predicted position. It was the planet that we now call Neptune.

Astronomers soon found that both Uranus and Neptune were straying from their 'correct' orbits, even when the gravitational influences of each other and of the other known planets were allowed for. There must be yet another undiscovered planet, farther out.

During the last three decades of the 19th century several astronomers searched carefully in small regions of the sky where they thought the new planet should be, but without success. The main problem was that even a planet the size of Uranus or Neptune – both giant planets – would appear perhaps only a

Pluto, on the very edge of the solar system, seems to be significantly different from the other planets. It follows a highly elliptical orbit, tilted at 17° to the ecliptic (the plane occupied by most of the other planets' orbits) and in composition it is more like a satellite than a planet. Pluto is fully 2750 million miles (4425 million kilometres) from the Sun, even when it is at its closest, as in 1989. It takes 248 years to circle the Sun once



Right: how an unseen planet made its presence felt. Before Neptune was discovered, its effects on Uranus had been observed. Neptune's gravity pulled Uranus with a force that was stronger the closer the two planets were. For some years before their closest approach Uranus was being accelerated by the pull of Neptune; thereafter Uranus was retarded. But after Neptune's discovery in 1846 it was found that it could not account for all of the disturbance of Uranus's path: another planet remained to be found

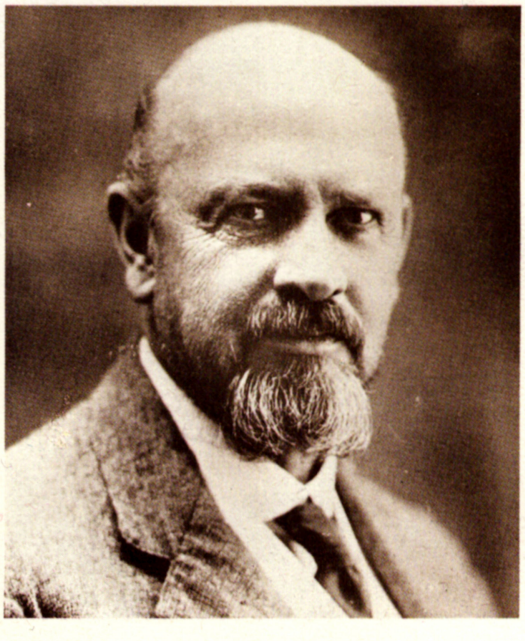
tenth as bright as Neptune and would be difficult to distinguish from a star. It would be easier to search, not by using a high magnification to reveal the planet's disc – which would show that it was not a star – but just by watching for its motion from night to night relative to the fixed background of stars. And to narrow down the search astronomers needed an accurate mathematical prediction of where the planet should be.

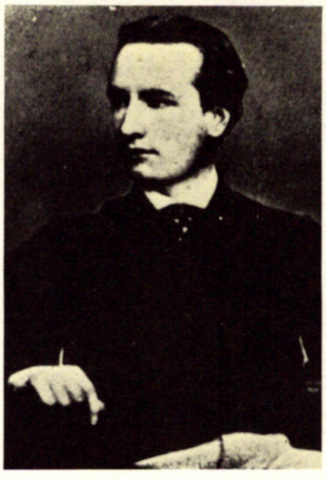
In the early decades of this century two American mathematicians attempted to match the feat of Adams and Leverrier. In 1908 William H. Pickering predicted the existence of 'Planet O', lying 52 astronomical units from the Sun (an astronomical unit, AU, is equal to the distance of the Earth from the Sun, which is 93 million miles [150 million kilometres]; Neptune lies 30 astronomical units from the Sun). Planet O, Pickering said, would be twice as massive as the Earth.

Pickering persuaded Milton Humason at the Mount Wilson Observatory in California to photograph the region of the sky in which Planet O should lie. Ironically, four of these photographs, made in 1919, do have images of Pluto on them. But the planet was fainter than Pickering had predicted, and was farther to the south. Humason did not notice it.

Pickering revised his calculation of Planet O's orbit several times. In 1928 he made it only 30 AU in radius, on the average – the same size as Neptune's orbit. It was markedly elliptical, so that it crossed over Neptune's orbit – as Pluto actually does. But after the apparent failure of Pickering's previous predictions, many astronomers did not take his calculations seriously, and a search was not carried out this time.

Percival Lowell, the other leading American astronomer to engage in planet hunting, had the advantage of his own professionally equipped observatory to follow up his own calculations. In 1915 Lowell predicted that a body he dubbed 'Planet X' lay at 43 AU from the Sun, and was seven times as heavy as the Earth. He also calculated that its orbit was more elliptical than that of any other planet and also tilted at a greater angle to the ecliptic – the plane in which all other planetary orbits roughly lie. Both these features are indeed characteristics of Pluto's orbit.





The English mathematician John Couch Adams had worked out Neptune's orbit by September 1845, beating the Frenchman Urbain Leverrier by a few days. However, it was Leverrier's work that led directly to the planet's discovery in 1846

The Lowell Observatory at Flagstaff, Arizona, photographed the region of sky where Planet X should have been. Once again later investigators have found images of Pluto on these photographs, but Lowell missed them because they were so faint.

The search lapsed for 13 years after Lowell's death in 1916; but the observatory acquired a new photographic telescope in 1929 and hired a keen young amateur astronomer, Clyde Tombaugh, to resume the quest. He began to work literally night and day – photographing regions of the sky at night and examining the plates during the day. He compared photographs taken a week or so apart, looking for a 'star' that had moved in that period.

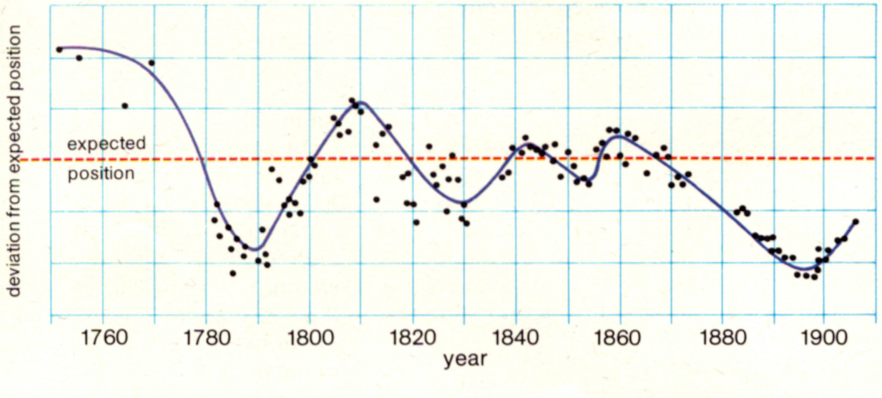
A star in a million

Tombaugh had looked at some 1.5 million star images when, on 18 February 1930, he struck lucky. That afternoon he found that a 'star' recorded on a plate taken on 23 January had moved by 29 January through a distance equal to that predicted for Lowell's Planet X.

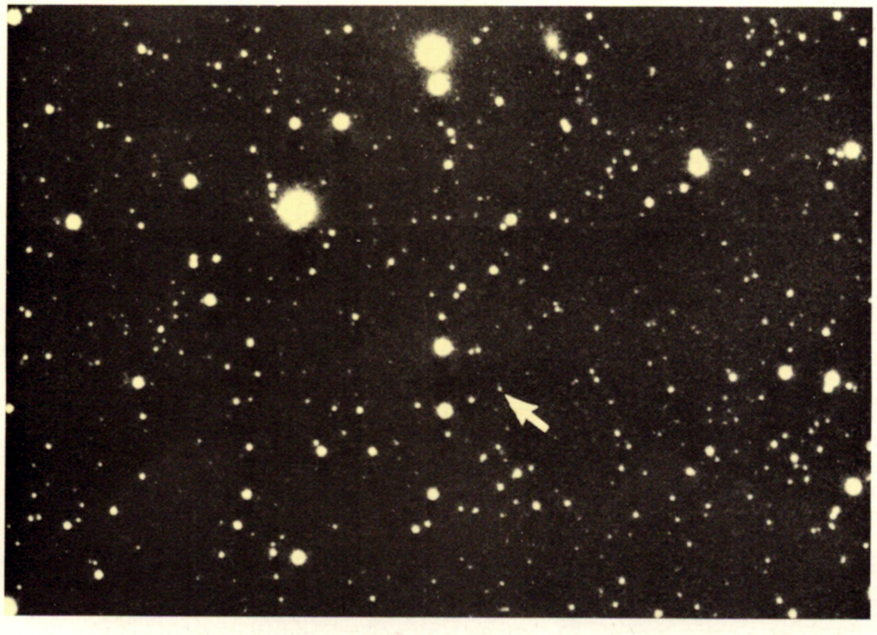
After taking several more photographs to check the motion, the Lowell Observatory announced the discovery of the new planet on 13 March – the 149th anniversary of William Herschel's discovery of Uranus and what would have been Lowell's 75th birthday had he lived. The name Pluto, after the ruler of the gloomy underworld of Greek mythology, was chosen as appropriate for a planet in the darkest regions of the solar system. It was first suggested by an 11-year-old English schoolgirl, Venetia Burney, and was proposed to the Lowell Observatory by an astronomer friend of hers.

With these observations the Lowell astronomers could work back to locate the images recorded on their 1915 plates and on the Mount Wilson plates of 1919. They could then calculate Pluto's orbit, which turned out to be almost exactly midway between the orbits of Lowell's Planet X and Pickering's Planet O as calculated in 1928.

The positions of Uranus over more than 150 years are plotted as dots on the graph (below). The amount by which they are above or below the dashed line shows by how much the planet was ahead of or behind the position expected, after allowing for the influence of Neptune. William H. Pickering (below left) calculated that a hypothetical 'Planet O' would cause Uranus to move according to the solid line. The close agreement between this and the observations gave him grounds for believing that Planet O really existed



Left: Percival Lowell launched a systematic search for 'Planet X' at his observatory at Flagstaff, Arizona, USA, but died without having found it. Fourteen years later, however, in a renewed search, the observatory gained the distinction of discovering Pluto, in an orbit similar to that predicted for Planet X



Above: one of the pair of photographs, taken in January 1930, on which Pluto was first detected. The movement of one faint 'star' (arrowed) showed that it was in reality a new planet

Modern analyses show that Pluto pursues an elliptical orbit at an average distance of 39.7 AU from the Sun, taking 250 years to complete one orbit.

But Pluto was 20 times fainter than either Lowell or Pickering had expected. It seemed that Pluto must be much smaller than the predicted Planet X or Planet O – and this discrepancy has continued to puzzle astronomers right up to the present day.

Pluto was so small that, at the time of its discovery in 1930, no telescope could show it as more than a point of light. Only in 1948, when the giant 200-inch (5-metre) telescope on Mount Palomar in California began operation, could Pluto be magnified enough to show a disc. In March 1950 Gerard Kuiper measured Pluto's size with this telescope and found it to be about 3700 miles (5900 kilometres) across – just under half the diameter of the Earth.

If this was correct then Pluto had only one tenth of the Earth's volume. Yet, according to the calculations that led to its discovery, Pluto packs even more mass than the Earth contains into this small volume. In other words, Pluto has a very high density.

An American astronomer, Dinsmore Alter, proposed that Pluto is the Earth's equal in size, but is very shiny, and that what Kuiper had seen was not the disc of Pluto but the image of the Sun reflected from its curved surface – like the small image of a light bulb reflected in a ball bearing.

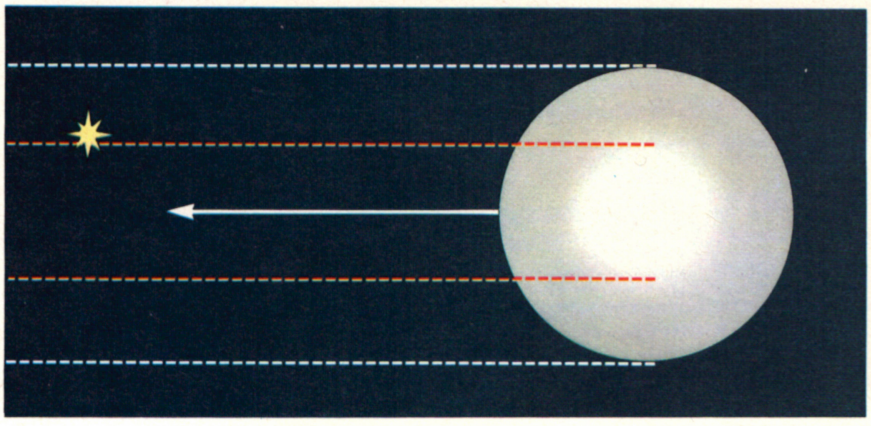
This idea was tested in 1965, when Pluto appeared to pass very close to a star, as seen from the Earth. If Alter was right, the unseen outer parts of Pluto should have blocked off the star's light. But the star stayed the same brightness right through the close approach: Pluto could not be much bigger than Kuiper had found, and could even be smaller.

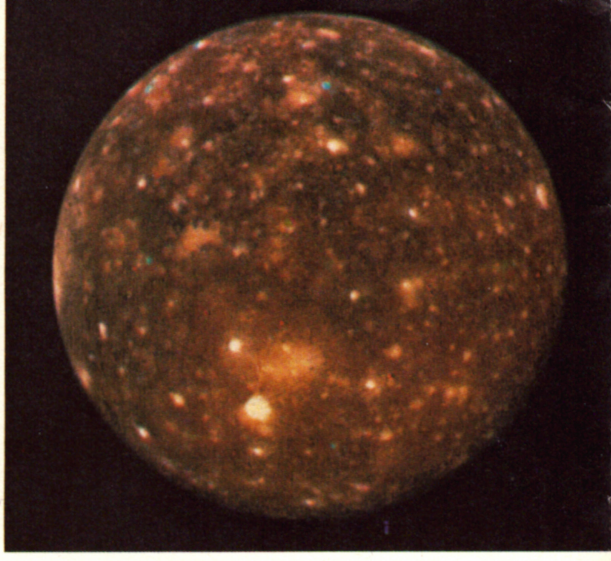
If Pluto really did pack as much matter as the Earth into a volume one tenth the size of the Earth, then it must be 10 times as dense as the Earth – itself the densest of the other known planets. This seemed incredible.

The first clues to Pluto's true mass were its similarities to the satellites of the giant outer planets, Jupiter, Saturn, Uranus and Neptune. With improved observations from the Earth, and the spectacular pictures taken by a series of space probes, astronomers have ascertained that these moons are composed mainly of ices – frozen water, carbon dioxide and methane – mixed with a little rock. These moons are much less dense than solid rock bodies such as the Earth or Moon. In 1977 observers using the 158-inch (4-metre) Mayall Telescope at Kitt Peak, Arizona, found that Pluto reflects infra-red radiation in exactly the same way as frozen methane. From analysis of its reflected light and infra-red radiation it was found that Pluto appeared to be identical to the icy moons of Uranus.

Pluto's peculiar orbit had prompted some

Right: Clyde W. Tombaugh, eight years after the discovery of Pluto, searches for further planets. He is using a device that flashes photographs of the same area of sky in succession. If a star's position is different in the two pictures, it seems to jump to and fro





astronomers to suggest that it *is* a satellite – one that has escaped from Neptune. There are two known satellites circling Neptune: Triton and Nereid. Triton is large – about 2300 miles (3700 kilometres) across. If Pluto had once been in orbit around Neptune, a close approach to Triton could have flung Pluto out into an orbit around the Sun. This would account for the fact that Pluto's orbit crosses Neptune's.

In the late 1970s astronomers were able to measure Pluto's size accurately for the first time using a new technique called speckle interferometry, which records star and planet images electronically and removes the distorting effect of the Earth's atmosphere. Pluto turned out to be a mere 2260 miles (3600 kilometres) across. This is almost exactly the same size as our Moon, and smaller than some of the satellites of Jupiter, Saturn and Neptune.

But if Pluto really were a methane-ice world no larger than our Moon, its mass would be less than one hundredth of the Earth's – yet its perturbations of Uranus and Neptune apparently showed it was about as massive as the Earth. Why the difference? Which mass estimate was right?

The definitive answer came in a totally unexpected way. The US Naval Observatory had for years been photographing Pluto regularly in order to work out its orbit accurately. On 22 June 1978 James Christy was looking at images of Pluto on photographic plates under a microscope – and realised that they were slightly pear-shaped. Photographs made on other dates showed the 'neck' of the pear pointing in other directions. Christy realised there was only one explanation: Pluto has a moon. The fainter image of the moon merges with that of Pluto, so it appears as a slight protrusion on the round body of Pluto's image. Christy called the satellite Charon, after the mythological boatman who ferried souls to the underworld, which was ruled by Pluto.

It was immediately clear that Charon is a rather odd moon. It is very large compared to the planet itself. French astronomers used the technique of speckle interferometry to produce pictures that distinguish the image of Charon from that of Pluto. They found

Above: how an upper limit to Pluto's size was discovered. It had been suggested that Pluto was shiny, and that the visible image was just the highlight on a larger dark sphere. But in 1965 Pluto passed very close to a star. Since the star's light was not blocked out, Pluto's diameter could be no greater than that of the band indicated by the red lines

Above right: is this what Pluto is like? Callisto, outermost of Jupiter's four principal moons, is made of rocks and 'ices' – such as frozen methane – in roughly equal proportions. Pluto probably has a similar composition, but is slightly larger. Astronomers think Pluto is a stray moon

Left: the landscape of Pluto, as imagined by an artist. Throughout Pluto's 'year', equal to 248 of our years, the Sun is between 30 and 49 times as far from the planet as it is from Earth. The Sun's warmth is so feeble that snows of frozen methane cover the rocky shores of a lake of liquid methane

that Charon is almost half as large as Pluto itself – much bigger in relation to its controlling planet than any other satellite. It is fairer to think of Pluto and Charon as constituting the halves of a double planet.

The most important result of Christy's discovery was that astronomers could now work out Pluto's gravity unambiguously for the first time. They could easily follow Charon's orbit, instead of relying on tiny perturbations of Uranus and Neptune – which could be due to something other than Pluto's gravity anyway. It turns out that Pluto's mass is only one five-hundredth of the Earth's. So Pluto is not the unbelievably dense world that astronomers were puzzling over in the 1960s. It is just a small frozen snowball of a planet – or rather, a double planet.

This small mass means that Pluto cannot have any measurable effect at all on the paths of the giant planets Uranus and Neptune. Yet it was perturbations in these orbits that led to the predictions of Pluto's position. And the predictions – of Lowell's Planet X and Pickering's Planet O – were accurate in all respects except that of Pluto's mass. In fact, they agreed much better with Pluto's orbit than Adams and Leverrier's predictions had agreed with Neptune's.

A planet beyond Pluto?

Yet the measurement of Pluto's mass from Charon's orbit is beyond dispute. Unbelievable as it seems, it was a mere coincidence that Pluto happened to lie at the spot predicted by Lowell and Pickering.

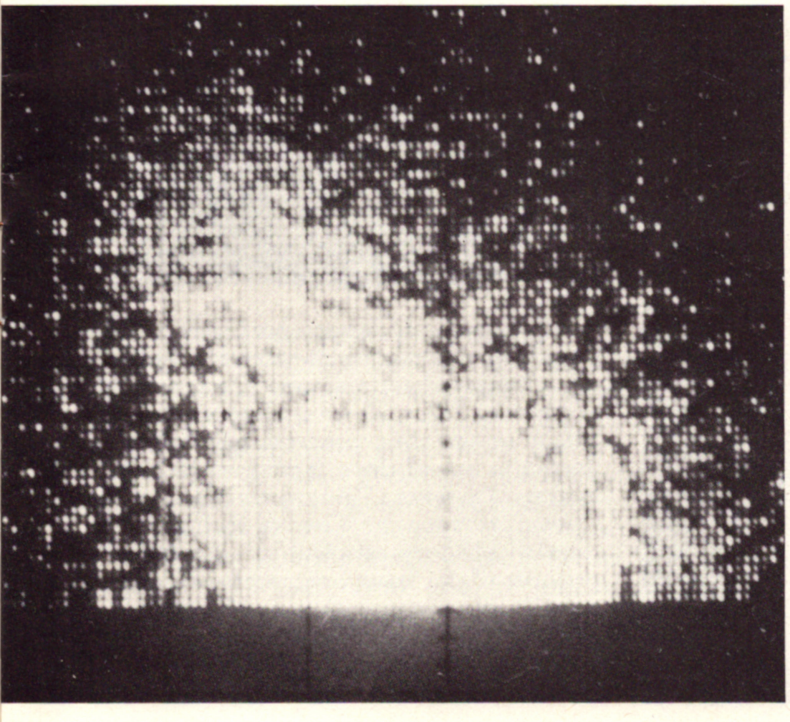
But if Pluto isn't disturbing the paths of Uranus and Neptune, what is? Astronomers are divided. Some argue that the deviations are only apparent, not real: they are due to small errors in measuring the planets' positions. Others differ. A team at the US Naval Observatory re-analysed the motions of Uranus and Neptune, now that it was known that Pluto could not affect them appreciably. They concluded that something is indeed affecting their paths. It could be a tenth planet, beyond Pluto.

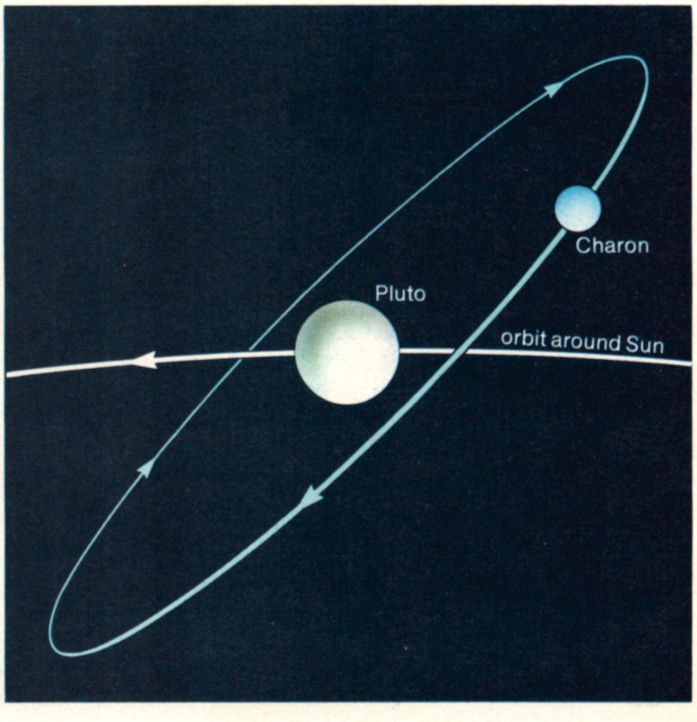
If there is a tenth planet, it will take a lot of searching to find it. After discovering Pluto in 1930, the meticulous Clyde Tombaugh decided to carry on searching the entire band of the zodiac, the region in which planets appear to move, in case there were more planets to be found. In 14 years he investigated the images of 45 million stars. He made many discoveries in the process: a new comet, six previously unknown star clusters, and 775 new asteroids. To keep the job manageable, he could study only images with a quarter the brightness of Pluto, or more. He concluded that his search would have picked up any Earth-sized planet closer than 100 AU from the Sun – two and a half times Pluto's average distance. He would have seen a planet as large as Neptune out to twice this distance. But he found no such planet.

No one will find a new planet unless his search is even more detailed than Tombaugh's marathon effort. But with modern automatic instruments to measure photographic plates, the long, eye-straining task of comparing the positions of star images can be done by computers, far more quickly. This also means that the search can be extended to fainter images. Such an automated search could reveal any Earth-sized planet within 300 AU of the Sun – out to almost 10 times the extent of the known planetary system. The task will not be easy, even so, but the rewards are high: to join Herschel, Galle, and Tombaugh – the select group of discoverers of new planets.

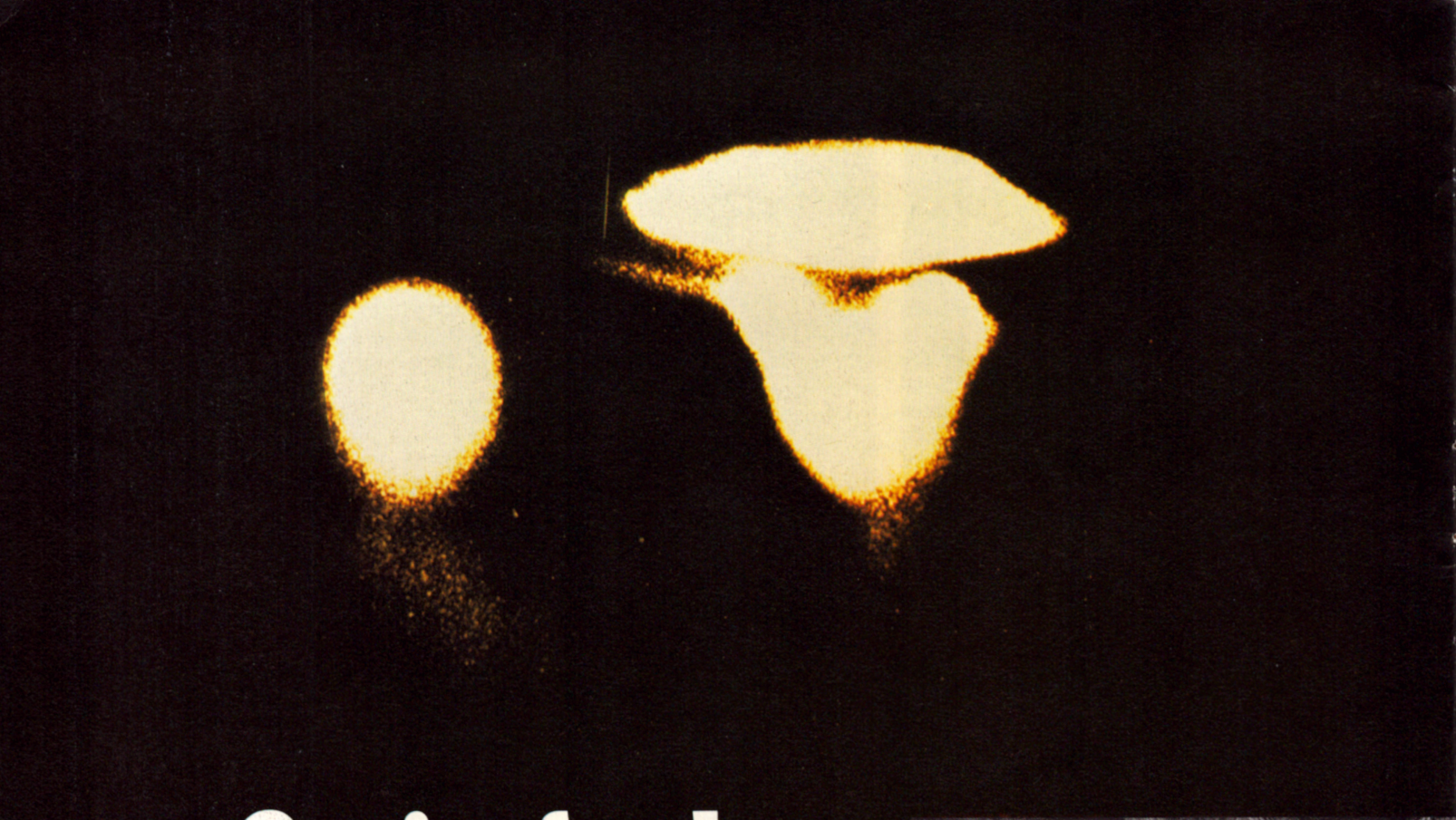
Further reading

Heather Couper, *Exploring space*, Sundial Books 1980
Nigel Henbest, *The mysterious Universe*, Ebury Press 1981
Clyde W. Tombaugh and Patrick Moore, *Out of the darkness*, Lutterworth Press 1980





Pluto and its satellite Charon are separated by the technique of speckle interferometry (below left). Electronic instruments are used to remove the smearing of the image caused by the Earth's atmosphere. Pluto is the large semicircular area, and Charon is the 'bump' above it and to the left. Detailed measurements show that Charon is about half the diameter of Pluto, which it orbits at a distance of about 14,000 miles (23,000 kilometres) (below right). Charon's orbit is strongly tilted in relation to Pluto's orbit around the Sun



A wise fool

Did Charles Fort stumble onto some cosmic understanding as a result of collecting anomalous phenomena ignored by scientists? BOB RICKARD explains why science today might do well to follow up some of Fort's leads

THE PUBLICATION OF *The book of the damned* by Charles Hoy Fort in 1919 changed the standard of reporting of anomalous phenomena in American newspapers for the better. Nonetheless, there was a sting in the tail. For whenever journalists reported a sighting of a sea serpent, or a home disrupted by a poltergeist, or a shower of frogs, they would comment to the effect that 'here is another datum for the archenemy of science, Charles Fort.'

This unfortunate reputation of Fort as an enemy of science lingers. Anyone who has read his books, however, must disagree. Fort was extremely well-versed and up to date in nearly all branches of science in his day and understood the scientific method, the rules of evidence and proper scholarship. Fort had looked closely at the great and impressive edifice of science and found it full of cracks. He found scientists who made pontifical pronouncements without bothering with the facts of the case, who substituted dogma for true scientific enquiry, who suppressed, ignored or explained away embarrassing data. He felt that anomalies held significance for science and should be studied. To understand that significance, it is necessary to look briefly at how science develops and changes.

Above: a UFO photograph of 1965, listed in the Condon Report as a possible fake. Fort's interest in and notes on UFOs helped set the stage for the development of present-day ufology

Right: Galileo demonstrates his telescope to Florentine nobles. The first person to use a telescope for the study of the skies, Galileo made a series of important findings in the early 17th century – but his work was rejected by hide-bound scholars and the then all-powerful Church because it went against accepted ideas

The history of science is not one of orderly progression; it resembles more a battle, full of seemingly chaotic advances, retreats and skirmishes. This view of disorder and accident in scientific progress has been endorsed in one of the essential works on the history of science, *The structure of scientific revolutions* (1962) by Thomas Kuhn. At any time in its history, says Kuhn, a science is the prisoner of the 'basic preconceptions' of the day. These preconceptions are limiting factors, which he calls 'paradigms'. But paradigms are essential to the formal expression of a science because they serve as models or

structures with which to organise whole areas of knowledge and to provide the context for explanations.

Kuhn shows that the rise of a new paradigm in science, and the demise of the outdated one, is not the 'graceful surrender' by fair-minded individuals that science propagandists would have us believe. It is often as painful and protracted as any religious or political revolution, and for much the same reason. Scientists are human beings with all the weaknesses and worries of human beings. They have a great deal invested in their job, their status and their credibility – factors of more value to their security than the ideal of an open mind. Above all, they tend to be loyal to the familiar paradigm.

The classic example of reluctance to accept something new is that of the group of Italian scientists who refused to look through Galileo's telescope lest they, like the Jesuit Clavius, be tempted to abandon their comfortable view of a geocentric Universe on seeing Jupiter's satellites through the instrument. Indeed, the revolutions of moons about Jupiter, the model for the new idea of the solar system, remained in contention for many years after Galileo proposed the idea.

A new paradigm, or the data that leads to it, can seem threatening, even sinister. So the body of orthodox science behaves like an invaded organism and closes ranks against the 'infectious' data. Eventually the anomalies mount up and there comes a time when they can no longer be ignored. There ensues a crisis period during which whole fields of science are broken apart and the pieces reassembled incorporating the new data. What was once anomalous is now accepted or explained as a self-evident fact. Recurrent crisis is not only typical of scientific progress,

Above: this illustration from Marco Polo's account of his Asian travels in the 13th century shows the fantastic creatures that, he had heard, lived in India. Such travellers' tales are still part of the data base of anomalous phenomena

Below: Antoine Lavoisier, the 'father of modern chemistry'. Despite his distinction as a scientist, he dismissed out of hand the existence of meteors – and helped prevent their being studied by science for decades

Kuhn says, it is essential to it. In *Lo!*, Fort called science 'the conventionalization of alleged knowledge', explaining: 'it acts to maintain itself against further enlightenment, but when giving in, there is not surrender but partnership, and something that had been bitterly fought then becomes another factor in its prestige.'

The main aim of orthodox science is to consolidate the field of knowledge, not to seek out oddities of fact or theory. Repeatability and regularity are preferred to anomalousness.

Age-old oddities

The study of strange phenomena is clearly not in the same stage of development as mainstream science. In the field of 'anomalistics', as some American scholars call it, collections of oddities have long abounded, however. Many of the works of the Greek philosophers such as Pliny, Pausanias and Athenaeus are rich in Forteana. So are the writings of travellers such as Ibn Batutah and Marco Polo and of the compilers of early bestiaries and natural histories such as Olaus Magnus and Edward Topsell. Their work forms a vast data base on the subjects currently lumped under the heading of 'the unexplained'.

If this data base corresponds roughly to what Kuhn calls the 'morass' of data at the early point of a science, then we are only awaiting the coming of that organising paradigm to begin our transformation into scientists. Once again Fort points the direction, giving us a particularly useful expression. He says that orthodox science is, by its own definition, 'exclusionist'. A scientific experiment, for example, is an attempt to isolate

something from the rest of the Universe. The flaw of orthodoxy lies in its attempts to put things into units or categories. Yet anyone who has seriously investigated strange data knows that they defy categorisation. Exclusionist science functions well enough but bases its criteria on arbitrary decisions. As science progresses, such distinctions become obsolete and collapse. Thus in the early 19th century many biologists still regarded living things as essentially different from non-living things: for these 'vitalists' there was an unbridgeable gap between the animate and inanimate worlds. But from 1828 onwards, as chemists learned to synthesise organic

Left: Werner Heisenberg, a Nobel prize-winner for his work in nuclear physics. The quantum theory, to which he made a great contribution, was not taught at one of Britain's ancient universities for 30 years after its formulation – a striking example of how scientists will sometimes resist new ideas from even their most distinguished colleagues

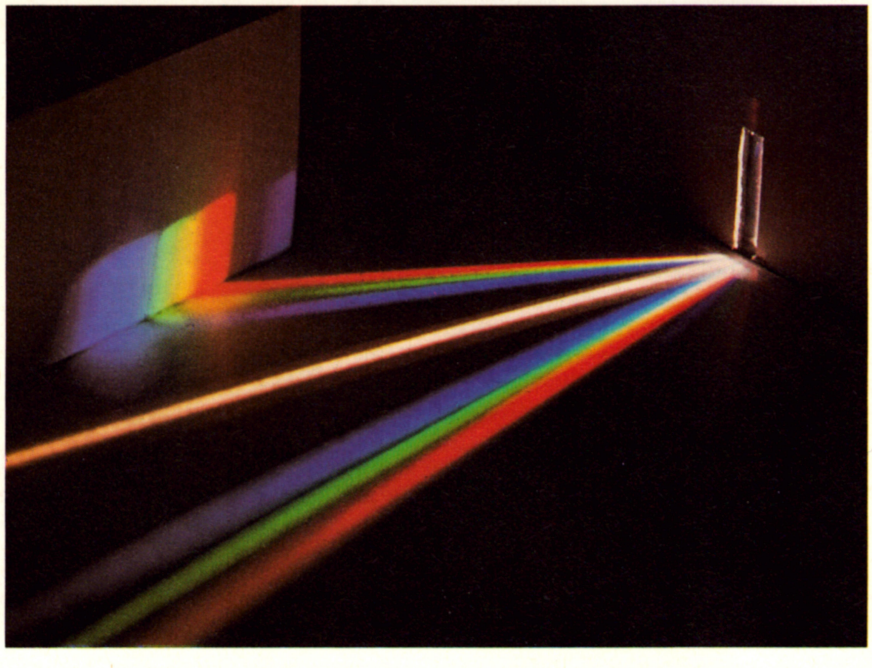
Below: a prism creates a colour spectrum when light passes through it – a fact that led to the theory that light was made up of waves, although Newton, who first performed this experiment, believed that light was composed of particles. Today light is considered to behave as a wave form *or* as a stream of particles (photons), depending on the experimental circumstances. This progression in the way that scientists explain light shows how a paradigm can change

compounds (compounds such as urea or acetic acid, which are produced by living organisms), the distinction between the animate and the inanimate lost its fundamental importance for chemists, and to present-day scientists seems little short of superstition. They tend to forget that many of the dividing lines drawn by today's science – such as that between mind and matter, for example – may be redrawn or abandoned; and they slavishly accept or reject data by criteria that are, at best, transient. It is clear that this arbitrary structure predetermines how we interrogate the Universe – and how we interpret its answers. The German physicist Werner K. Heisenberg wrote: 'What we observe is not nature itself, but nature exposed to our method of questioning.' So light will behave like a wave or a particle according to the context in which it is investigated. Or, as the duck said with peculiar logic in *Alice in Wonderland*: 'When *I* find a thing, it's usually a frog or a worm.'

The barriers between the acceptable and unacceptable in science are changing all the time. What is magic or superstition to one era may become the science of the next. The great French chemist Antoine Lavoisier told the Academy of Sciences in 1769 that only peasants could believe stones could fall from the sky, because 'there *are* no stones in the sky.' His influence prevented scientific study of meteorites – the 'stones from the sky' – until 1803.

But some barriers are breaking down. Today's life sciences contain much rehabilitated folklore: old herbals have been used for new pharmaceuticals and the practices of shamans have been adapted for new treatments. Apparitional phenomena, once the preserve of theologians and demonologists, are now the subject of psychical research and psychology. A number of Fort's special correlations – strange lights on the Moon, curious aerial lights and sounds that accompany or precede earthquakes, lunar periodicities in biological processes and behaviour, lake monsters and UFOs – are all matters of serious academic study today.

In answer to how strange phenomena could relate to the main body of science, Fort suggested that it was science that would make the move to assimilate anomalous phenomena by adopting a more radical, inclusive approach. Inclusionists would 'substitute acceptance for belief', he said, but only temporarily until better data or theories arose. This is exactly what true scientists do, of course, because for them enquiring after the truth is more important than being right or first. Inclusionism would recognise a state of existence in which all things, creatures, ideas and phenomena were interrelated and so 'of an underlying oneness'. From his thousands of notes, Fort came to the realisation that the Universe functioned more like an organism than a machine and that, while



Left: Charles Hoy Fort at his super checkerboard. He invented a game called super checkers (draughts), which was so complicated that it usually took all night to play it to the end

Below: a medieval fool. The jester poked holes in the customs and beliefs of his society – a role Fort played in ridiculing the scientific establishment of his day

Bottom: the simply marked grave of Fort at Albany, New York, where he was born

general principles applied universally, eccentricities, deviations and anomalies were the inevitable result of local expression of those principles. This almost mystical view anticipates C.G. Jung's notion of the collective unconscious and similar beliefs that appear in the cosmologies of primitive and animistic religions. Yet another theory in which the world is seen as functioning more like an organism than a machine emerged in 1981 – Dr Rupert Sheldrake's principle of formative causation (see page 1141). This appears to offer philosophical tools for exploring continuity and synchronicity by postulating a resonance between forms of similar structure, whether living or not, that operates outside time and space.

Portents of change

In earlier times, most cultures had an appreciation of anomalies that we have lost. They also had some framework in which to study them, usually as omens or portents of social change, as Jung has suggested UFOs are (see page 426). Priests in rural Scandinavia in the late medieval period were obliged to report to their bishops anything contrary to the 'natural order'. Their chronicles that survive are treasure troves of sea serpent sightings, falls of mice and fish, animal battles and other strange phenomena.

Today such stories are absent from the scientific journals, where Fort found them, and are used as small filler paragraphs in the newspapers, written inaccurately and for laughs. Apart from a few excellent specialist magazines, the only regular journals devoted to the reporting and discussion of Fortean phenomena are two American publications, the *Journal* of the International Fortean Organisation and *Pursuit*, published by the Society for the Investigation of the Unexplained (SITU), and Britain's independent *Fortean Times*. The only scientific body concerned with anomalous phenomena is the Center for the Study of Short-Lived Phenomena, formerly part of the Smithsonian Institution in Washington DC, USA. It is now a successful self-funding venture. The establishment in London in 1981 of the Association for the Scientific Study of Anomalous Phenomena (ASSAP) may be a sign of hope for interdisciplinary studies of all sorts in the future.

One day, when orthodox science widens its circle of attention, the task of assimilating Fortean phenomena will have been made easier by the dedicated collectors of obscure and weird data. Their true function, in relation to mainstream science, is elegantly stated in a line from Enid Elsford's book on the medieval fool: 'The Fool does not lead a revolt against the Law; he lures us into a region of the spirit, where . . . the writ does not run.'

For the present author at least, Charles Hoy Fort was science's fool.

Further reading

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The lost isle of Lyonesse

Lyonesse – the magical land west of Land's End to which, so the legend goes, the mortally wounded King Arthur was taken after his last battle – has long been thought to exist only in the imagination. But, argues PAUL BEGG, it may indeed have been a real place

THE LEGEND OF THE LOST LAND of Lyonesse is as confused as it is beautiful. In ancient days, so the local legend goes, Lyonesse was a country that extended westwards from Land's End in Cornwall, connecting the Scilly Isles – which were then linked, forming one big island – with the mainland of England. One hundred and forty parish churches existed there, in good and prosperous farmland, and there were a number of fair-sized towns. It is said that fishermen have pulled up stones from the buildings of Lyonesse in their nets, and that to this day the bells of long-submerged churches can be heard on still nights.

Some poetic stories are set in Lyonesse. It was allegedly the home of Tristram, lover of Isolde, and when it was submerged the only person to escape was a man called Trevilian, who jumped on a white horse and rode to safety. The crest of the Trevelyan family still shows a white horse galloping just ahead of the onrushing waves. Tennyson, outlining a projected work on Camelot in 1842, wrote this lyrical account of Lyonesse, adding to the confusion by siting Camelot there:

> On the latest limits of the West in the land of Lyonesse, where, save the rocky isles of Scilly all is now wild sea, rose the sacred Mount of Camelot. . . . The Mount was the most beautiful in the world, sometimes green and fresh in the beam of morning, sometimes all one splendour, folded in the golden mists of the West. But all underneath it was hollow, and the mountains trembled when the seas rushed bellowing through the porphyry caves; and there ran a prophecy that the mountain on some wild morning would topple into the abyss and be no more.

More recent reports suggest that memories of the real Lyonesse are still somehow stored at its site.

In the 1930s Stanley Baron, a journalist working for the London *News Chronicle*, is said to have heard bells when staying at Sennen Cove, immediately to the north of Land's End. At 1 a.m. one day he was awakened by a rhythmic clanging that persisted for two hours. Later the bells woke him again, and the muffled peal continued until dawn. When he asked his hosts the origin of the sound, they told him that it was the bells of Lyonesse.

Even more startling was a vision seen and

Above: an aerial view of the rocky promontory of Land's End, the extreme western tip of Cornwall. Local legend relates that a stretch of land once joined Land's End to the Scilly Isles (below) – the magical Lyonesse

Right: Edith Olivier who, standing on the cliffs at Land's End, allegedly saw some of the domes and spires of Lyonesse

reported by Edith Olivier, a sometime mayor of Wilton, near Salisbury. Standing on the cliffs of Land's End, she saw a jumble of spires, towers, domes and battlements in the sea!

Edith Olivier's vision may be dismissed as the product of an over-active imagination, but standing on the cliffs of Land's End it is certainly possible to find oneself entranced by the legend of Lyonesse. In the 19th century many artists were attracted by the 'mystical' quality of the light of the Atlantic seaboard, and standing on the cliffs, with the distant Isles of Scilly bathed in the rays of a dying Sun, one can easily believe that the lost land once existed and imagine the catastrophe that swept it beneath the sea. 'On a stormy day at Land's End,' wrote the Poet Laureate, Sir John Betjeman, 'when the two seas collide – the Atlantic Ocean and the English Channel – the waves seem mountains high and one wonders that even the granite can stand up against their force and that the rugged peninsulas survive.'

At one time the Scilly Isles were joined to the mainland by dry land, but that was well before Man trod the Earth. This seems disappointing, for how could a legend recall an event that occurred before Man existed? Yet, like so many persistent legends, the story of the disappearance of Lyonesse may recall a genuine catastrophe. Geologists believe that once upon a time, perhaps within recorded history, there was one large Scilly Isle, perhaps surrounded by a few rocky islets, and it is possible that the Lyonesse story recalls a time when the sea made a dramatic inroad and swamped the land, leaving only the mountain tops – the present islands – above the level of the water.

The Scilly Isles are a group of about 140 small granitic islands and islets lying 28 miles (45 kilometres) west-south-west of Land's End. Chief among them are St Mary's, Tresco, St Martin's, St Agnes and Bryher. 'A small sweet world of wave-encompassed wonder,' the poet Swinburne called them. The many sailors who have been wrecked or almost wrecked in those treacherous waters have, no doubt, described the Scillies in equally colourful, but perhaps less poetic, language.

The richness of archaeological remains testifies to the importance of the islands in prehistoric times. The islands have over 50 megaliths, a figure disproportionate to the area – Cornwall, for example, has only 17. It has been suggested that the Scillies may have been islands sacred to the dead and that the megaliths may mark the burial places of kings and princes of the mainland. It was once widely believed that spirits of the dead could not cross water, so that to bury a dead

chief on the islands would have been a sure way of preventing his return to his kingdom, where he could cause problems for his successor. It may have been the dim local tradition of the Scillies being 'sacred isles' that gave rise to the legend that King Arthur was rowed out to the west to Lyonesse after the fatal battle of Camlann. Another explanation is that if the Scillies *were* once a single island, their population might have been much larger – larger perhaps even than Cornwall's – and the large number of megaliths would no longer seem surprising, particularly if, being out of touch with the mainland, the early Scillonians continued to use megaliths long after the practice had ceased elsewhere.

Perishable remains

It is pointed out by some experts that the inundation of the Scillies would have been well-documented had it happened in historic times and that, since no such documents have been found, there can have been no inundation. However, this is not necessarily true: the Romans and Anglo-Saxons never occupied Cornwall effectively so, even if they had heard the legend of Lyonesse, they might not have attached any significance to it. Also, the common writing material of the period was papyrus, which perishes all too easily in the damp British climate. By the early medieval period all we might expect to find are records of a garbled oral tradition – and that is exactly what we have.

For reliable information we must turn to archaeology and geology, but there is one body of written material worth examining for any clues it might hold. This concerns a mysterious island or islands from which the Phoenician traders obtained supplies of tin, and which the Greeks called the Cassiterides.

The Phoenicians were extremely secretive about their supply of tin and left no indication as to the location of the Cassiterides. Some clues are provided by the travels of a man called Pytheas of Massalia – Marseilles – who, two or three hundred years before Christ, followed the Phoenicians' trade routes. Nothing is known for certain about him, and his voyage cannot be more precisely dated than some time between 310 and 238 BC, but it is now generally accepted that he journeyed around Britain. Indeed, on the grounds that the Phoenicians had no real idea of the extent of the British Isles, Pytheas is sometimes credited with the discovery of Britain. His own account of the voyage no longer exists, but was used as source material by many writers, among them Diodorus Siculus and Strabo.

Megalithic monuments on the Scilly Isles: a burial chamber on Little Arthur (top) and a row of standing stones on St Mary's (above). The Scilly Isles have an exceptionally large number of such monuments – which has led some experts to suggest that the population of the Scillies must once have been far larger than it is now

Strabo (63 BC-AD 21), a Greek historian and geographer, wrote that the Cassiterides were

> opposite the west parts of Britain, situate as it were in the same climate with Britain, are ten in number and lie near each other, in the ocean toward the north from the haven of Artabri. One of them is a desert, but the others are inhabited by men in black cloaks, clad in tunics reaching to the feet, girt about the breast, and walking with staves.

Strabo, then is quite clear that the Cassiterides were not a single island, but numbered 10 and were situated opposite the west of Britain. The position certainly fits the Scilly Isles in everything but number.

Diodorus Siculus, a Sicilian-Greek historian writing about the time of the Emperor Augustus (27 BC-AD 14), described Britain as triangular in shape and assigned to the vertices of the triangle the names Kantion, Orka and Belerion. Kantion is Kent, and Orka is

clearly the northern tip of Scotland opposite the Orkney Islands, so by elimination Belerion must be the ancient native name for Land's End. Diodorus writes:

> The natives of Britain near the headland of Belerion are unusually friendly and through intercourse with foreign traders have become very mannerly. They have a clever process for extracting tin from its bed . . . . After they have smelted and refined the tin they hammer it into the shape of knucklebones and transport it to an adjoining island named Iktis. Having waited for the ebb tides to lay bare the intervening channel, they bring entire loads of tin across on wagons. Now there is a peculiar phenomenon connected with the neighbouring islands. I mean those that lie between Europe and Britain, for at the flood tide the intervening passage is overflowed, and they seem like islands, but a large space is left dry at the ebb and they seem to be like peninsulas.

Dangerous anchorage

Diodorus's words have been interpreted to mean that the natives of Cornwall (Belerion) mined tin – that Cornwall is therefore probably the Cassiterides – and transported it by wagon at ebb tide to the island of Iktis. Iktis has been identified as the picturesque St Michael's Mount, which rises precipitously to a height of 230 feet (70 metres) from Mount's Bay and at low water can be reached by a causeway from Marazion. However, without the modern quay, St Michael's Mount would have been an extremely dangerous anchorage affording little shelter and is therefore an odd place for the traders to choose to draw up their ships.

Another objection to the identification of the Cassiterides as mainland Cornwall is that this hardly fits Strabo's description of 10 islands. It seems far more reasonable to suppose that Diodorus is referring to the Scillies, but if so, he is saying that they could be reached from the mainland over dry land at ebb tide. This most certainly isn't possible today, and geologists are adamant that it hasn't been possible since prehistoric times.

'The natives of Britain *near* the headlands of Belerion . . . .' Could Diodorus's opening statement refer to the natives of Britain who lived on Scilly *near the headlands of Belerion*? It fits Strabo's location of the Cassiterides as 'opposite the west parts of Britain' and being 'ten in number' (more will be said about the number) and, if the interpretation is correct, early descriptions of the Cassiterides indicate that there was once a large Isle of Scilly surrounded by nine lesser isles, one of which was Iktis, and that all were joined together at ebb tide.

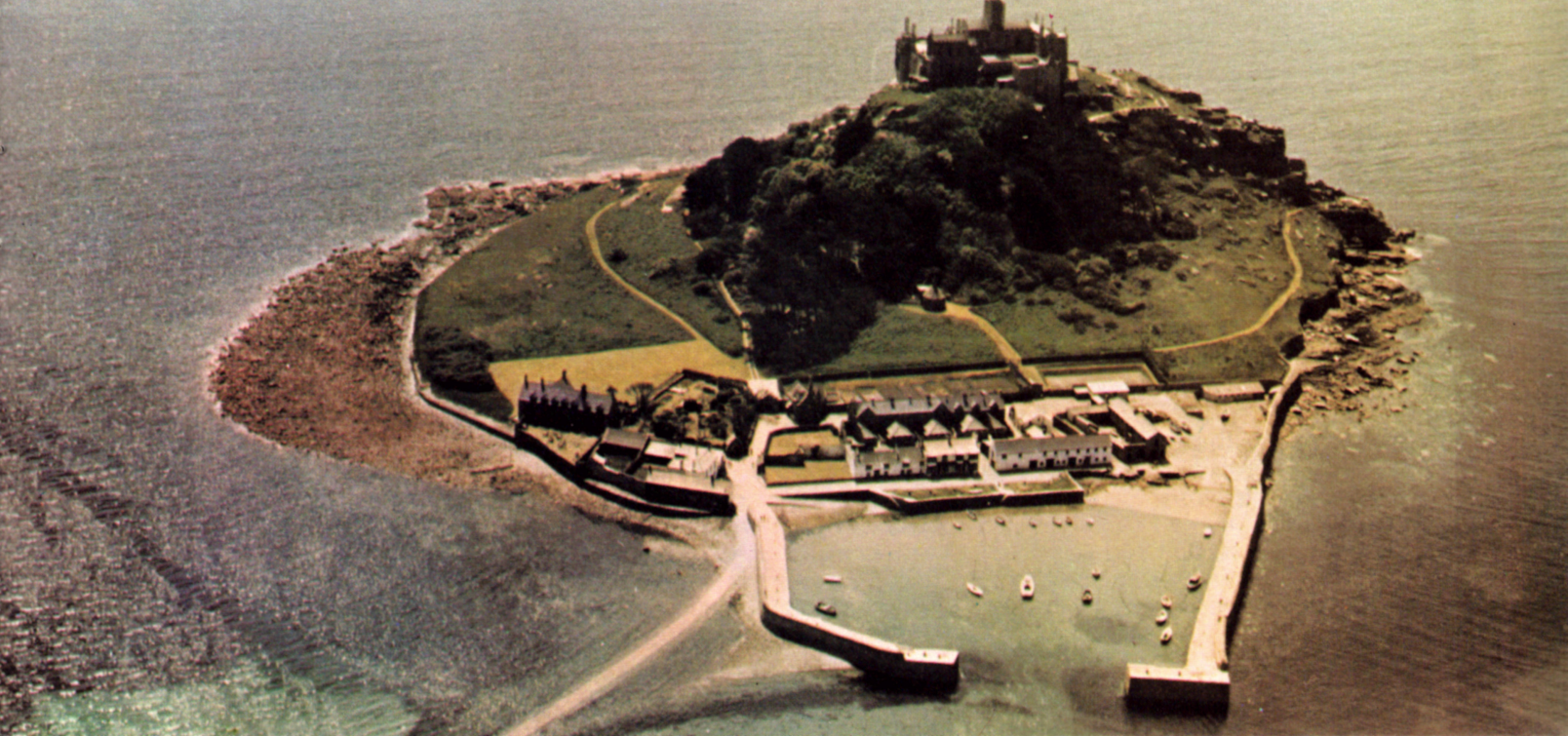
One of the objections to the identification of the Cassiterides with the Scilly Isles is the opinion of geologists that the islands were never very rich in tin. However, early accounts may suggest that tin existed near the surface, the early mining pits therefore being shallow and soon lost once they were no longer in use. There are references to tin being mined, or of its availability for mining, in 1563. In 1750 an army officer named Robert Heath reported that in 1744 a 'miner discovered a rich vein of ore, which promised encouragement for working.'

Finally, it should be noted that there are two very early descriptions of the Scilly Isles, one in the *Polyhistor* written by Solinus about AD 240, the other by Sulpicius Severus, writing about AD 400. Significantly, they both refer to Scilly in the singular – *Siluram insulam*!

Above: the Greek historian and geographer Strabo (63 BC–AD 21), who gives an account of the Cassiterides, a group of 10 islands 'opposite the west parts of Britain'. This description fits the Scilly Isles – in everything but number

Below: St Michael's Mount, near Marazion in Cornwall. A first-century AD account refers to an island named Iktis, which some historians have identified as St Michael's Mount. Others, however, have suggested that Iktis is in fact the Scilly Isles, then a single island – perhaps the original Lyonesse

Were the Scilly Isles really the site of the legendary Lyonesse? See page 1786



Angel of mercy

Of the many practising British healers few are so dedicated – or as successful – as Rose Gladden, who works on both sides of the Atlantic. DAVID HARVEY tells the story of this remarkable woman who has demonstrated her gift under strict test conditions

When Rose Gladden (left) initiates the healing process (below) she believes she is acting primarily on the spiritual level, so that the physical body can, and frequently does, also benefit from what she calls her 'attunement' with the patient

ONE OF THE OUTSTANDING challenges for science is to discover what actually happens when a healer cures the sick. A start has been made, but research in this area is in its infancy. Yet the problem is not one of reluctance on the part of healers to co-operate with researchers: 'I am willing to submit to any test if it helps people to understand what I experience during healing,' says Rose Gladden, an English healer who has built up a reputation for her work on both sides of the Atlantic. And, true to her word, she has already participated in a number of scientific experiments. But while her telephone rarely stops ringing, the invitations to participate in research projects are few and far between.

One researcher with whom she has had a fruitful association is Maxwell Cade, a psychologist who has carried out pioneering work in the areas of meditation, relaxation and altered states of consciousness. In particular he has developed, with Geoff Blundell, a sophisticated set of biofeedback equipment including the 'Mind Mirror', a portable electroencephalograph (EEG) that displays brainwave patterns on panels of lights. Rose Gladden was one of the healers who led Cade to the discovery of distinctive brainwave patterns in healers. What is more, the research she participated in also demonstrated that, on at least one level, healers have a measurable effect on their patients – who, after a few minutes of healing, pick up and imitate the same brainwave pattern as the healer. It provides objective verification of what Rose and other healers mean when they speak of 'attunement' with their patients.

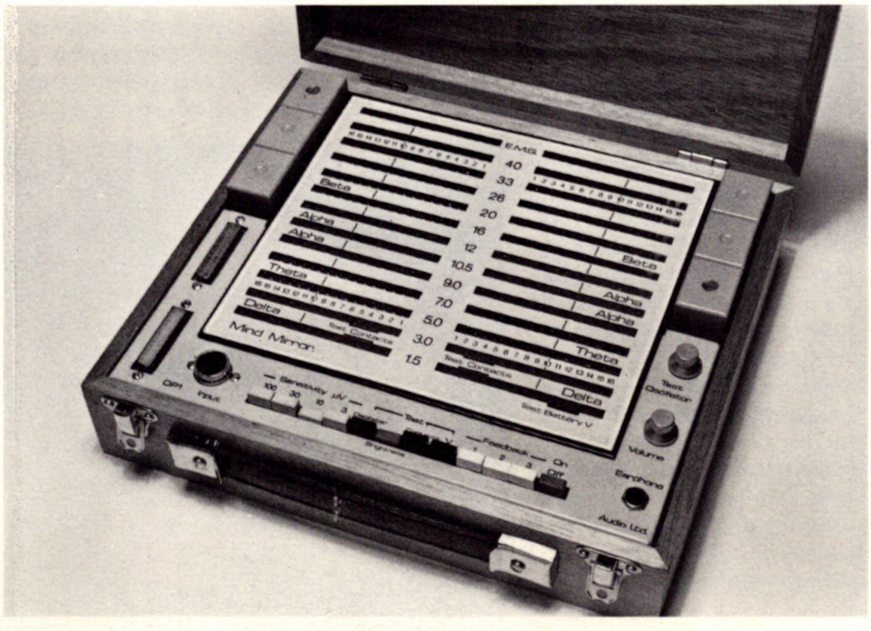
But if scientists have failed to produce the definitive explanation for the healing effect, it probably does not worry Rose's patients. They continue to go to her because of her reputation as a healer who gets results. At her home in Letchworth, Hertfordshire, she has files of letters and reports concerning people who have found relief from their suffering and sometimes experienced complete cures. What makes their stories remarkable is that improvements in their condition have often occurred after all else has failed.

A 54-year-old woman from Baldock, in Hertfordshire, said that when she went to see Rose for treatment, she was 'on the verge of suicide'. For over 33 years she had suffered with constant aches in her back, arms and legs. 'After only a few minutes at her house I felt absolutely cured,' she said. 'When I left I

was able to walk home and later do the shopping, a thing I have not been able to do for years.'

There are several examples of Rose's success with people for whom orthodox medicine had failed to bring relief. A man from Luton in Bedfordshire was able to walk again after one visit to Rose, having been a virtual invalid for seven months. 'Forty-five minutes after I arrived I was able to walk out on my own,' he said.

The pain in his back and leg that had stopped him walking had been extensively investigated over five years. All Rose did, said the patient, was 'rub the base of my back and my leg where the pain was. There was a tremendous heat in her hands and I could feel a throb from her thumbs. Apparently the trouble was to do with a nerve.' To his utter relief, the problem evaporated. 'I don't know where she gets her powers from, but thank God I'm cured. No other treatment could do it and I'm sure that by the end of the month I wouldn't have been able to get about at all.'



But by no means everyone experiences this kind of instant help. The majority of those who do experience improvement find that it is usually gradual, taking place over a number of weeks. It depends on the individual, the nature of the problem and a host of other factors.

Nor is the effect of healing necessarily registered at the time it is given. One 56-year-old woman who went to Rose complaining of painful spasms came away disappointed, apparently none the better. She said: 'As nothing had happened, I put it all down to experience and dismissed it from my mind. I went to bed as usual, depressed and frustrated with pain. Next morning when I got up I realised I was absolutely free of any pain. It was wonderful to walk about and bend at will.' Although there was an improvement, the recovery was not complete and the woman required further treatment.

There are many cases in Rose's files that show that there is no doubt in the minds of scores of people that they have received positive benefit from her healing, no matter how intractable their complaints. Their recovery in these circumstances raises a question: how does Rose Gladden succeed where orthodox – and even other alternative – therapies fail? How do Rose and the group of healers, including her husband Peter, with whom she works, achieve their results?

The root of the evil

The clue may lie in the kind of treatment given, which works on a completely different level from orthodox medicine. Whatever the problem – 'we have dealt with most things over the years, arthritis, cancer, bad backs, epilepsy, multiple sclerosis, you name it and we've probably seen it,' says Rose – it is tackled on a non-physical level. The only exception is when healing is combined with reflexology, an ancient Eastern therapy that involves applying pressure to certain points on the foot. Other than that, and perhaps a gentle massage, physical contact during treatment is limited to the healer's hands being placed on or over the patient. Rose is convinced that:

> most healing is done through the mind. Your hands guide the healing force and give comfort. But it's the concentration of your mind that is doing the healing . . . . You attune your mind to a level where there is a tremendous power and love. You also attune yourself to the person you are healing. In this way, you act as a channel for the healing energy.

The transfer of this energy is believed to occur initially on a spiritual, rather than a physical, plane. Many healers subscribe to

Of the few researchers willing to investigate someone with abilities as unorthodox as those of Rose Gladden, Maxwell Cade (top) has made the most remarkable discoveries. When Rose was tested with the 'Mind Mirror' – a biofeedback device (above and right) that displays brainwave patterns on panels of light – it showed clearly that she has a distinctive brainwave pattern, which was later found to be the same in other gifted healers

the view that we are not just complex biochemical machines but multi-dimensional beings comprising etheric, astral and other 'bodies' in addition to the physical one. Rose is one of those people who claim to be able to see these other bodies as an aura – or outline of coloured light around the physical body. She believes that imbalances and blocks of 'energy' in the different layers of the aura are often the cause of, or are linked to, the physical symptoms that are experienced by the patients.

A matter of cause and effect

Rose declares: 'From watching the emanations from the various bodies, I can see where the source of the problem lies. When the cause of the problem is treated at this level, the physical pain usually clears itself.'

But there are often limits to what can be achieved. If a healer is able to influence the recovery rate by stimulating the patient's self-healing processes, it still requires some positive effort on his or her part. 'A lot of people expect you to do it all. "You're the healer," they say, "you do it for me, but don't tell me to stop smoking or change my diet." It's most important for them to realise that they must allow their lives to change.'

Rose first became fully aware of her healing ability when she was 19, in the 1940s. 'But I didn't discover it. This is the strange thing. It discovered me.' She goes on:

> I had gone into a shop in London called Dyers and Chapman and found Mr Chapman, who had collapsed, lying under the counter. I asked him what was wrong and he said, 'I'm in terrible pain. I have an ulcer.' Now I didn't know where that ulcer was. All I thought was, 'I wish I could help him,' and I heard a voice say, 'You can. Put your hand there.' 'But where?' I asked myself. 'He hasn't told me where this ulcer is.'
>
> With that I saw a little star, just as if it had fallen out of the night sky, floating over his left shoulder and as I watched, the star floated down and stopped on the top half of the stomach.

Rose Gladden spends six months of every year working with researchers, and lecturing and healing, in the United States. The other six months she and her husband Peter (right) run a healing group at their home (below) in Letchworth, Hertfordshire. Although her life's work is healing, Rose has other psychic gifts and has sometimes used them in detecting the source of poltergeist disturbances

Mr Chapman confirmed that was where the ulcer was. As I put my hand there, I never saw but felt another hand come over mine and hold it steady. I felt my hand being filled with a tremendous heat. I couldn't move it away. It was as if it was glued to that part of the body. After a while, my hand was pulled like a magnet to his side and then away from his body.

With that, he said, 'That's gone, it's marvellous. Your fingers felt as if they were holding the pain and as you took your hand across, the pain went with it.'

I was absolutely overjoyed. I still didn't know you called it healing. I just knew I was beginning to realise why I was born and what I had to do in life was help people.

A disturbing gift

But it was not to be an easy path. Although from the earliest age Rose had seen forms and beings that were invisible to others, no one had explained the nature of psychic abilities, or shown her how to control them. Later, in her twenties, they controlled her.

There was a period when the nature and intensity of her psychic experiences became unbearable and she seriously questioned her sanity. It was not until she met a woman who recognised her talent as a natural medium that she started to learn how to control and utilise her abilities.

However unpleasant that period had been, looking back on it now Rose believes that she had to suffer in order to learn. Her own experiences enable her to help others in the same situation today. She is in no doubt that there is a spirit world populated by evil as well as good entities and that malign influences can seriously disturb, even possess, some people.

Of course, this is not possible according to modern psychiatry, but Rose is sure that mental homes include patients who are in need not of orthodox psychotherapy and drugs, but of treatment of a different kind.

Rose shares the joy of a 'miraculously' healed patient. But often she will heal, then give advice about how to avoid a repetition of the illness – only to be told, 'You're the healer, you do it for me.' Rose responds by pointing out that many ailments are the direct result of bad habits, such as smoking or eating the wrong foods

During Rose's period of psychic development, other abilities came to the surface, although she did not realise their full significance at the time. As well as being able to read the aura for signs of ill-health, Rose found that she could see silver spots and lines over people's bodies. When she asked people what their symptoms were they would say it was stomach ache, back pain and so on. But the problem would appear to be situated elsewhere, perhaps in a completely different part of the body, which Rose saw as a point of light. 'I'd put my hand on the silver light, and the pain would go,' says Rose.

Some years after she learned to use this system of diagnosis and treatment, Rose discovered what she was doing. 'I was at an International Spiritualist Federation meeting talking about this and I was asked if I knew what these lines were.' From the audience the President called an acupuncturist to the platform and Rose described the position of the lines and points of light she saw. 'I learned that I was seeing the points and meridians used in acupuncture.' (See page 181.)

Rose and her group treat sick people throughout the week for six months of the year. The remaining time Rose spends in the United States, where there is a great demand for talks and lectures on the subject as well as for demonstrations of the healing process.

But there is a long way to go before her kind of treatment is more fully understood in terms that make sense scientifically. The danger is that, because the explanations of how healing works are so unorthodox, the whole subject may well be avoided by conventional doctors. Rose herself does not claim it is a substitute for medicine, but that it is an extension of orthodox treatment. Perhaps its value is best summed up by a psychotherapist who consulted her for treatment of a slipped disc. 'Healing works – fact! Accept it and thank God for it.'

A personal testimony

Norah Forbes, wife of a leading health campaigner, took part in one of Rose Gladden's public healing demonstrations, and reported:

'Once on stage, I shut my eyes and, with Rose's hands on my head I was able to relax quite quickly. . . . I heard her say that there was a dark area in the front below the ribs on the left-hand side; Rose is clairvoyant, and I should say here that she knew nothing at all about my health and at this point I revealed nothing, but at the end I did feel bound to tell the audience that I had kidney problems, for I was born with polycystic kidney disease.

'In what seemed like seconds, I found myself to be free of myself. . . . I was at one with both the audience and with Rose; this is something that one would not imagine to be possible in front of so many people. . . .

'I was surprised to notice that the actual touch of the healer was not an important feature. But when she breathed very deeply, I felt compelled to breathe in unison with her and I was assimilating some of her love, her well-wishing and her well-being.'

Norah Forbes's experience convinced her that healing does take place – not just physically, but also on a much deeper, more spiritual, level.

The way ahead

The Society for Psychical Research has weathered 100 years of controversy and even confusion. A.J. ELLISON, the society's president in its centenary year, assesses its continuing problems – and its positive contributions

THE FOUNDERS of the Society for Psychical Research (SPR) set out in 1882 with high hopes that the work of the society, firmly based on the well-established methods of science, would lead to answers to some of the most basic, important and perennial questions of humanity. Does the human personality survive bodily death? Are human beings in touch with each other in ways independent of the bodily senses? And so on.

What is the situation today? People often ask, in relation to the work of the SPR, 'Well, after 100 years, what do you really know?' The answer is, we know a great deal.

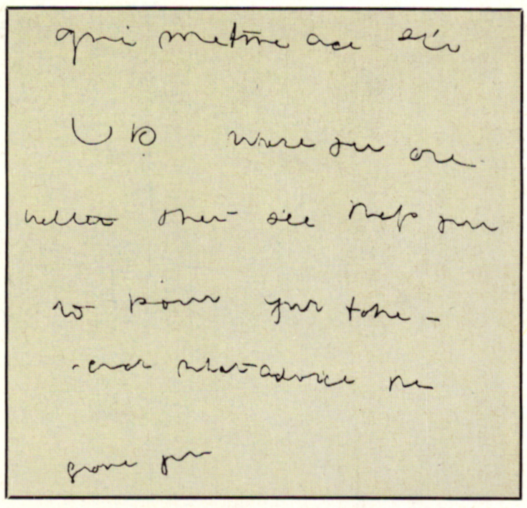
Scientific research is a process of asking questions of nature. In some areas we have discovered that we may have been asking nature the wrong questions, or inappropriate questions. Distinguished researching members of the SPR have usually been very cautious in their replies to questions asking for conclusions. And they have not been at all ready to accept facile answers to questions that may be much more complex than the questioner realises. The result of this has been that the SPR has acquired a reputation for inordinate scepticism, an inability to accept anything at face value. But there was always good reason for this attitude even though it was often misunderstood. This point can be well-illustrated with examples.

Who goes there?

'Do you believe in ghosts?' Usually when this question is asked the questioner has in his mind the traditional idea of a ghost: a 'dead' person wandering around the physical world in some sort of ethereal next-world body. This is the popular idea of ghosts – but the SPR's researchers have discovered that seeing a 'ghost' is almost always *an hallucinatory experience*. Only if the question were reworded as 'Do you believe that people sometimes experience apparitions?' would modern psychical researchers answer 'Yes'. It would, however, be an emphatic affirmative for there is plenty of good evidence that people do see such apparitions.

Two early surveys carried out by SPR members showed that about 10 per cent of the people who replied did believe in apparitions (see page 1683). Later surveys gave somewhat similar responses. The difficult part is the explanation. What causes people occasionally to have an experience like that? Probably there are different causes for the

Above: the head office of the Society for Psychical Research (SPR) at 1 Adam and Eve Mews, off Kensington High Street in west London. The building houses an impressive library (right), which stores one of the world's most comprehensive collections of books on telepathy, mediumship, life after death, hypnosis, dreams, out-of-the-body experiences, poltergeists, apparitions and allied phenomena



Right: some lines of automatic script, allegedly from a dead SPR member, Dr Richard Hodgson, through the mediumship of Mrs Piper. Although the SPR is reputed to be somewhat sceptical about claims of communication from the dead, arguably some of the best evidence for an afterlife is to be found in its 'cross-correspondences'

Below: *The psychic dance*, a cartoon by Heath Robinson. The society's own social functions, however, are considerably more conventional

different types of apparition – 'haunting', 'telepathic', 'crisis' and 'experimental'. But, as psychical researchers have found out, apparitions are not very often much to do with 'dead' people.

Another frequent cause of misunderstanding between the SPR and the public – and in particular Spiritualists – concerns mediumistic evidence relating to survival after death. Often the SPR has been accused of being frankly biased against mediums and sceptical about any sort of afterlife. But this view is based on the SPR investigators' meticulous and objective sifting of the evidence – and the discovery that in many alleged communications other factors, such as telepathy among the living, play a major role. For example, if a medium says that she 'sees' – through her clairvoyance – a 'discarnate communicator', and if she then 'hears' – through her clairaudience – information such as might be passed on by such an ostensible communicator, and if the sitter recognises this information, it is usually suggested that this is proof of the presence of the surviving communicator (a 'spirit'). If the psychical researcher suggests caution before drawing such a conclusion, then this, it is suggested, is more evidence of inordinate and unreasonable scepticism. But that is not true. It is quite possible, and is probably frequently the case, to have apparently satisfactory seances with no one from the 'next world' taking part at all.

Dr S.G. Soal appeared to be receiving excellent evidence from his deceased brother Frank via the control personality – the 'spirit guide' – of the trance medium Mrs Blanche Cooper. Memories, shared and long forgotten, were recalled to his mind by the 'communicating' Frank. However, Dr Soal went away and devised a completely fictitious character whom he called James Ferguson, imagining all sorts of incidents in the life of this character. When James Ferguson was very clear in his mind Dr Soal made another appointment with Mrs Cooper. The control personality welcomed Soal and said that he had another communicator with him. The new communicator gave all sorts of facts to prove that he really had lived on earth. He was, he said, James Ferguson – but the only life he had ever lived had been in Dr Soal's imagination.

The Irish poet W.B. Yeats was once having a sitting with the well-known automatic writing medium Geraldine Cummins. He got a story 'from the other side' that did not seem of any particular interest and Geraldine Cummins asked him if she should continue. 'Yes,' he said, 'that is the plot of my new book.' Philip, the imaginary 'ghost' (see page 1021), was also able to 'communicate' by table rapping – to produce both information and physical phenomena – but only provided most of the sitters continued to 'believe' in his existence.

Truth and consequences

Yet the evidence for survival is very good, and is to be found in the voluminous papers known as the cross-correspondences (see page 478) in the SPR's archives. An authentic discarnate communicator certainly cannot always be ruled out. Probably it is right to consider a good sitting with a medium to consist of a mixed bag of telepathy with the sitter, the general ESP of the medium, the medium's own conscious and unconscious guesses, feedback from the sitter to the medium, and perhaps some signs of a genuine communicator somewhere in the background. Considerable experience is needed to sort out the components of an average sitting. In almost all cases, the explanation is not nearly as simple as it seems and frequently the researcher seems confronted by confusion. It is clear why strictly controlled laboratory tests were devised to try to establish exactly what is going on.

A member of the SPR cannot leave a consideration of the difficulties inherent in mediumship without paying a tribute to the Spiritualist movement in general, and mediums in particular. When scientific tests are needed to try to solve some of these deep

Just some of the SPR's archives, which contain files on many of the most famous cases of psychical research – as well as thousands of notes on little-known examples of extraordinary phenomena

psychological mysteries, mediums have always been ready to volunteer.

But although the questions raised by mediumistic communications remain largely unanswered, many modern researchers feel that other aspects of the paranormal are more likely to yield conclusive answers. Among the younger generation of professional parapsychologists telepathy and psychokinesis (PK) are the main areas of study.

Dr Carl Sargent at Cambridge University has convincingly shown that even 'non-psychic' people can become receptive to telepathy when ordinary, outside stimuli are blocked out in the state known as the Ganzfeld (see page 1430). And he has confirmed the work of other researchers that shows that telepathic awareness can be *learned*.

Brave new thinkers

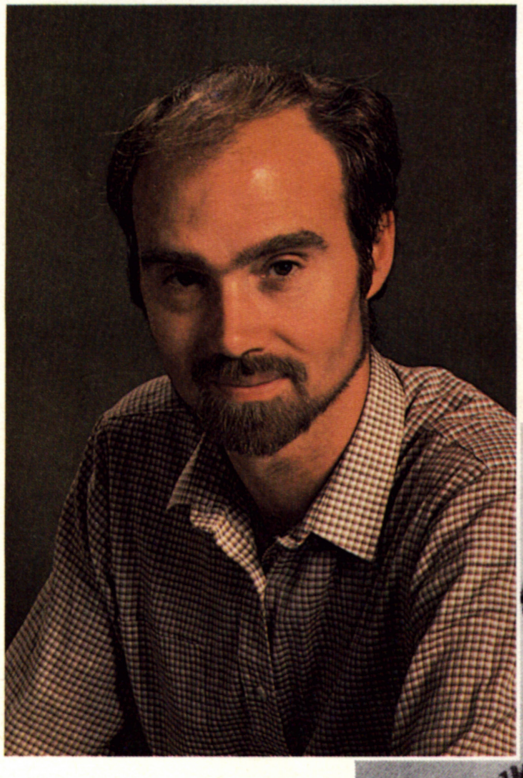
At the University of Aston in Birmingham Julian Isaacs is maintaining high academic standards in his search for metal benders. He has discovered that psi is much more common in everyday life than has previously been believed. And his British minilab programme (see page 1306), if successful, will provide irrefutable proof of PK.

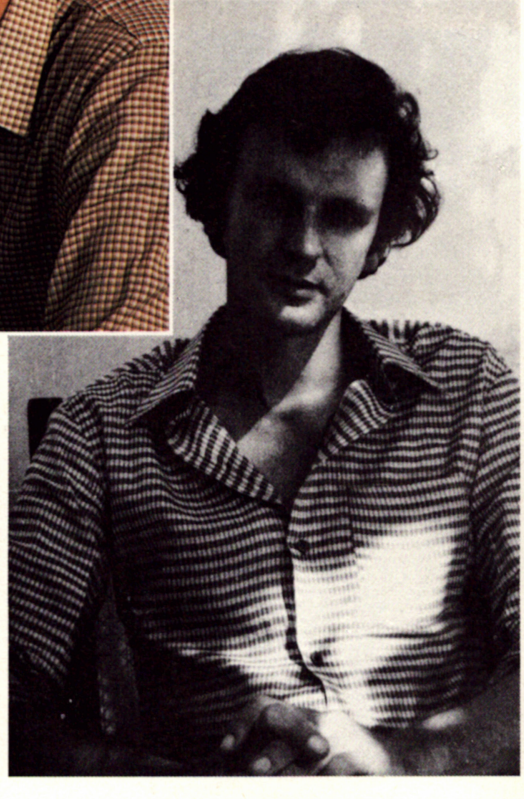
There are other highly respected scientists from many disciplines whose work is throwing the mechanistic school of thought into confusion – and shedding light on many of the deeper questions of life. One of the most eminent of these is Professor John Hasted, a renowned physicist of Birkbeck College, London, whose work, both in the theory and practice of paranormal metal bending, has done much to edge psychical research into academic respectability.

And quite outstanding among the brave new thinkers is Dr Rupert Sheldrake, a young plant physiologist whose book *A new science of life* (1981) caused such a stir among conventional scientists that the editor of *Nature* denounced it as a 'book for burning'. Sheldrake's hypothesis of formative causation (see page 1141) proposes that morphogenetic fields are responsible for evolution, learning – and *memory* – in living things. If the hypothesis proves to have a basis in fact then a great many cherished beliefs of established science will be demolished.

But despite these glittering promises, the SPR occasionally has difficulties, especially, and usually, related to the rigorous maintenance of those scientific standards of accuracy, objectivity and balance, which are now traditionally associated with it. In this approach it is unique among psychical research groups in Britain and most of the members feel that these standards must never be lowered merely in order to court popularity.

So perhaps there has never been a more auspicious time to join in the search for answers to some of humanity's deepest questions. The SPR is in good shape and good heart for its next century.





Two of the SPR's members who look set to make major contributions to psychical research – as well as to more orthodox fields of science – are Julian Isaacs (left), who has devised 'fool-proof' methods of detecting PK, and Dr Rupert Sheldrake (below), who proposes that morphogenetic fields are responsible for evolution – and that memories are stored in them

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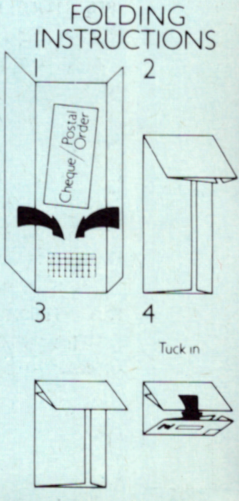

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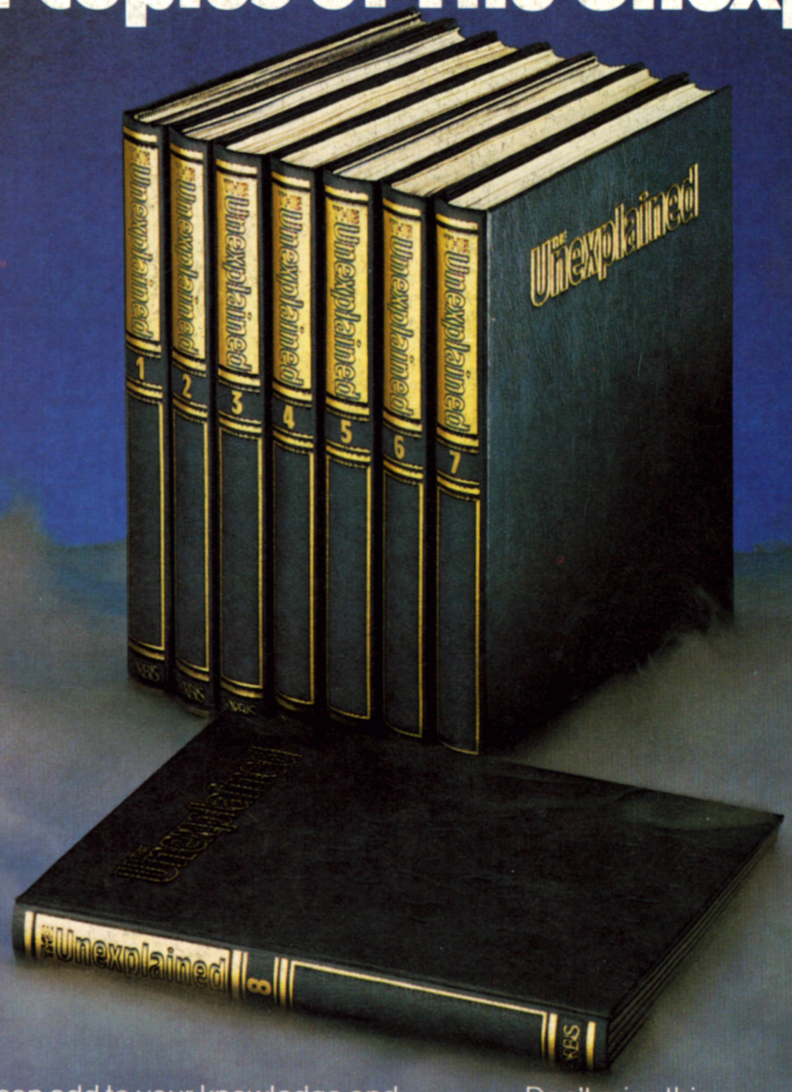

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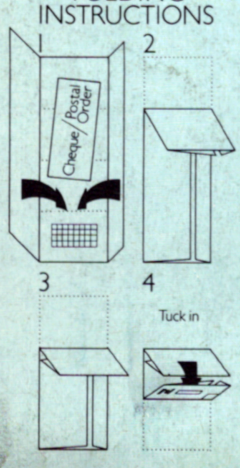

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